

# Safety Data Sheet

acc. to OSHA HCS

Printing date 11/14/2017

Reviewed on 11/14/2017

## 1 Identification

- **Product identifier**
- **Trade name:** Bromine Solution
- **Article number:** ERL265
- **Details of the supplier of the safety data sheet**
- **Manufacturer/Supplier:**  
Aqua Solutions, Inc.  
6913 Highway 225  
DEER PARK, TX 77536  
USA  
800-256-2586
- **Information department:**  
Technical Coordinator  
Sherman Nelson sherman@aquasolutions.org
- **Emergency telephone number:**  
Chemtrec: 800-424-9300  
Canutec: 613-996-6666



## 2 Hazard(s) identification

- **Classification of the substance or mixture**



GHS02 Flame

Flam. Liq. 1 H224 Extremely flammable liquid and vapor.



GHS06 Skull and crossbones

Acute Tox. 3 H331 Toxic if inhaled.



GHS08 Health hazard

STOT SE 1 H370 Causes damage to organs.



GHS07

Skin Irrit. 2 H315 Causes skin irritation.

Eye Irrit. 2A H319 Causes serious eye irritation.

- **Label elements**
- **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).
- **Hazard pictograms**



GHS02



GHS06



GHS07



GHS08

- **Signal word** *Danger*

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**Trade name: Bromine Solution**

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· **Hazard-determining components of labeling:**

Methanol (Methyl Alcohol)

Bromine

· **Hazard statements**

Extremely flammable liquid and vapor.

Toxic if inhaled.

Causes skin irritation.

Causes serious eye irritation.

Causes damage to organs.

· **Precautionary statements**

Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

Ground/bond container and receiving equipment.

Use explosion-proof electrical/ventilating/lighting/equipment.

Use only non-sparking tools.

Take precautionary measures against static discharge.

Do not breathe dust/fume/gas/mist/vapors/spray.

Wash thoroughly after handling.

Do not eat, drink or smoke when using this product.

Use only outdoors or in a well-ventilated area.

Wear protective gloves/protective clothing/eye protection/face protection.

If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.

IF INHALED: Remove person to fresh air and keep comfortable for breathing.

If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.

Continue rinsing.

Specific treatment (see on this label).

If skin irritation occurs: Get medical advice/attention.

If eye irritation persists: Get medical advice/attention.

Take off contaminated clothing and wash it before reuse.

In case of fire: Use for extinction: CO<sub>2</sub>, powder or water spray.

Store in a well-ventilated place. Keep container tightly closed.

Store in a well-ventilated place. Keep cool.

Store locked up.

Dispose of contents/container in accordance with local/regional/national/international regulations.

· **Classification system:**

· **NFPA ratings (scale 0 - 4)**



Health = 2

Fire = 4

Reactivity = 0

· **HMIS-ratings (scale 0 - 4)**



Health = 3

Fire = 3

Reactivity = 0

· **Other hazards**

· **Results of PBT and vPvB assessment**

· **PBT:** Not applicable.

· **vPvB:** Not applicable.

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### 3 Composition/information on ingredients

- **Chemical characterization: Mixtures**
- **Description:** Mixture of the substances listed below with nonhazardous additions.

- **Dangerous components:**

|                |                           |         |
|----------------|---------------------------|---------|
| CAS: 67-56-1   | Methanol (Methyl Alcohol) | 86.242% |
| CAS: 7726-95-6 | Bromine                   | 1.889%  |

- **Table of Nonhazardous Ingredients**

|                |                |        |
|----------------|----------------|--------|
| CAS: 7647-15-6 | Sodium Bromide | 11.87% |
|----------------|----------------|--------|

### 4 First-aid measures

- **Description of first aid measures**
- **General information:**  
Immediately remove any clothing soiled by the product.  
Remove breathing apparatus only after contaminated clothing have been completely removed.  
In case of irregular breathing or respiratory arrest provide artificial respiration.
- **After inhalation:**  
Supply fresh air or oxygen; call for doctor.  
In case of unconsciousness place patient stably in side position for transportation.
- **After skin contact:** Immediately wash with water and soap and rinse thoroughly.
- **After eye contact:**  
Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.
- **After swallowing:** If symptoms persist consult doctor.
- **Information for doctor:**  
· **Most important symptoms and effects, both acute and delayed** No further relevant information available.  
· **Indication of any immediate medical attention and special treatment needed**  
No further relevant information available.

### 5 Fire-fighting measures

- **Extinguishing media**
- **Suitable extinguishing agents:**  
CO<sub>2</sub>, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
- **For safety reasons unsuitable extinguishing agents:** Water with full jet
- **Special hazards arising from the substance or mixture** No further relevant information available.
- **Advice for firefighters**
- **Protective equipment:** Mouth respiratory protective device.

### 6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures**  
Wear protective equipment. Keep unprotected persons away.
- **Environmental precautions:** Do not allow to enter sewers/ surface or ground water.
- **Methods and material for containment and cleaning up:**  
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).  
Dispose contaminated material as waste according to item 13.  
Ensure adequate ventilation.
- **Reference to other sections**  
See Section 7 for information on safe handling.

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See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

· **Protective Action Criteria for Chemicals**

| · <b>PAC-1:</b> |                           |                       |
|-----------------|---------------------------|-----------------------|
| CAS: 67-56-1    | Methanol (Methyl Alcohol) | 530 ppm               |
| CAS: 7647-15-6  | Sodium Bromide            | 12 mg/m <sup>3</sup>  |
| CAS: 7726-95-6  | Bromine                   | 0.033 ppm             |
| · <b>PAC-2:</b> |                           |                       |
| CAS: 67-56-1    | Methanol (Methyl Alcohol) | 2,100 ppm             |
| CAS: 7647-15-6  | Sodium Bromide            | 130 mg/m <sup>3</sup> |
| CAS: 7726-95-6  | Bromine                   | 0.24 ppm              |
| · <b>PAC-3:</b> |                           |                       |
| CAS: 67-56-1    | Methanol (Methyl Alcohol) | 7200* ppm             |
| CAS: 7647-15-6  | Sodium Bromide            | 830 mg/m <sup>3</sup> |
| CAS: 7726-95-6  | Bromine                   | 8.5 ppm               |

## 7 Handling and storage

· **Handling:**

· **Precautions for safe handling**

Ensure good ventilation/exhaustion at the workplace.

Open and handle receptacle with care.

· **Information about protection against explosions and fires:**

Keep ignition sources away - Do not smoke.

Protect against electrostatic charges.

Keep respiratory protective device available.

· **Conditions for safe storage, including any incompatibilities**

· **Storage:**

· **Requirements to be met by storerooms and receptacles:** Store in a cool location.

· **Information about storage in one common storage facility:** Not required.

· **Further information about storage conditions:**

Keep receptacle tightly sealed.

Do not gas tight seal receptacle.

Store in cool, dry conditions in well sealed receptacles.

Protect from heat and direct sunlight.

· **Specific end use(s)** No further relevant information available.

## 8 Exposure controls/personal protection

· **Additional information about design of technical systems:** No further data; see item 7.

· **Control parameters**

| · <b>Components with limit values that require monitoring at the workplace:</b> |  |
|---|--|
| CAS: 67-56-1 Methanol (Methyl Alcohol)  |  |
| PEL   | Long-term value: 260 mg/m <sup>3</sup> , 200 ppm |

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|  |  |
|--|--|
| <b>REL</b>   | Short-term value: 325 mg/m <sup>3</sup> , 250 ppm<br>Long-term value: 260 mg/m <sup>3</sup> , 200 ppm<br>Skin      |
| <b>TLV</b>   | Short-term value: 328 mg/m <sup>3</sup> , 250 ppm<br>Long-term value: 262 mg/m <sup>3</sup> , 200 ppm<br>Skin; BEI |
| <b>CAS: 7726-95-6 Bromine</b>                      |  |
| <b>PEL</b>   | Long-term value: 0.7 mg/m <sup>3</sup> , 0.1 ppm   |
| <b>REL</b>   | Short-term value: 2 mg/m <sup>3</sup> , 0.3 ppm<br>Long-term value: 0.7 mg/m <sup>3</sup> , 0.1 ppm                |
| <b>TLV</b>   | Short-term value: 1.3 mg/m <sup>3</sup> , 0.2 ppm<br>Long-term value: 0.66 mg/m <sup>3</sup> , 0.1 ppm             |
| <b>· Ingredients with biological limit values:</b> |  |
| <b>CAS: 67-56-1 Methanol (Methyl Alcohol)</b>      |  |
| <b>BEI</b>   | 15 mg/L<br>LD50 Intraperitoneal: urine<br>Time: end of shift<br>LD50: Methanol (background, nonspecific)           |

· **Additional information:** The lists that were valid during the creation were used as basis.

· **Exposure controls**

· **Personal protective equipment:**

· **General protective and hygienic measures:**

Keep away from foodstuffs, beverages and feed.

Immediately remove all soiled and contaminated clothing.

Wash hands before breaks and at the end of work.

Store protective clothing separately.

Avoid contact with the eyes and skin.

· **Breathing equipment:**

In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.

· **Protection of hands:**



Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.

Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.

Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

· **Material of gloves**

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

· **Penetration time of glove material**

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

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## · Eye protection:



Tightly sealed goggles

## · Body protection: Protective work clothing

## 9 Physical and chemical properties

## · Information on basic physical and chemical properties

## · General Information

## · Appearance:

|                 |                 |
|-----------------|-----------------|
| Form:           | Liquid          |
| Color:          | Orange          |
| Odor:           | Methanol        |
| Odor threshold: | Not determined. |

· pH-value: Not determined.

## · Change in condition

|                              |                |
|------------------------------|----------------|
| Melting point/Melting range: | Undetermined.  |
| Boiling point/Boiling range: | 1 °C (33.8 °F) |

· Flash point: 11 °C (51.8 °F)

· Flammability (solid, gaseous): Not applicable.

· Ignition temperature: 455 °C (851 °F)

· Decomposition temperature: Not determined.

· Auto igniting: Product is not selfigniting.

· Danger of explosion: Product is not explosive. However, formation of explosive air/vapor mixtures are possible.

## · Explosion limits:

|        |           |
|--------|-----------|
| Lower: | 5.5 Vol % |
| Upper: | 44 Vol %  |

· Vapor pressure at 20 °C (68 °F): 128 hPa (96 mm Hg)

· Density at 20 °C (68 °F): 0.8425 g/cm<sup>3</sup> (7.03066 lbs/gal)

· Relative density: Not determined.

· Vapor density: Not determined.

· Evaporation rate: Not determined.

## · Solubility in / Miscibility with

Water: Not miscible or difficult to mix.

· Partition coefficient (n-octanol/water): Not determined.

## · Viscosity:

|            |                 |
|------------|-----------------|
| Dynamic:   | Not determined. |
| Kinematic: | Not determined. |

## · Solvent content:

Organic solvents: 86.2 %

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**VOC content:** 86.24 %  
726.6 g/l / 6.06 lb/gl

**Solids content:** 0.0 %  
· **Other information** No further relevant information available.

## 10 Stability and reactivity

- **Reactivity** No further relevant information available.
- **Chemical stability**
- **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
- **Possibility of hazardous reactions** No dangerous reactions known.
- **Conditions to avoid** No further relevant information available.
- **Incompatible materials:** No further relevant information available.
- **Hazardous decomposition products:** No dangerous decomposition products known.

## 11 Toxicological information

- **Information on toxicological effects**
- **Acute toxicity:**

· **LD/LC50 values that are relevant for classification:**

**ATE (Acute Toxicity Estimate)**

|            |          |                    |
|------------|----------|--------------------|
| Oral       | LD50     | 24,285 mg/kg (rat) |
| Inhalative | LC50/4 h | 3.48 mg/l          |

**CAS: 67-56-1 Methanol (Methyl Alcohol)**

|            |          |                       |
|------------|----------|-----------------------|
| Oral       | LD50     | 5,628 mg/kg (rat)     |
| Dermal     | LD50     | 15,800 mg/kg (rabbit) |
| Inhalative | LC50/4 h | 3 mg/l (ATE)          |

**CAS: 7726-95-6 Bromine**

|            |          |                   |
|------------|----------|-------------------|
| Oral       | LD50     | 2,600 mg/kg (rat) |
| Inhalative | LC50/4 h | 750 mg/l (mouse)  |

- **Primary irritant effect:**
- **on the skin:** Irritant to skin and mucous membranes.
- **on the eye:** Irritating effect.
- **Sensitization:** No sensitizing effects known.
- **Additional toxicological information:**  
The product shows the following dangers according to internally approved calculation methods for preparations:  
Toxic  
Irritant

- **Carcinogenic categories**

· **IARC (International Agency for Research on Cancer)**

None of the ingredients is listed.

· **NTP (National Toxicology Program)**

None of the ingredients is listed.

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· **OSHA-Ca (Occupational Safety & Health Administration)**

None of the ingredients is listed.

## 12 Ecological information

- **Toxicity**
- **Aquatic toxicity:** No further relevant information available.
- **Persistence and degradability** No further relevant information available.
- **Behavior in environmental systems:**
- **Bioaccumulative potential** No further relevant information available.
- **Mobility in soil** No further relevant information available.
- **Additional ecological information:**
- **General notes:**  
Water hazard class 1 (Self-assessment): slightly hazardous for water  
Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
- **Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.
- **Other adverse effects** No further relevant information available.

## 13 Disposal considerations

- **Waste treatment methods**
- **Recommendation:**  
Must not be disposed of together with household garbage. Do not allow product to reach sewage system.
- **Uncleaned packagings:**
- **Recommendation:** Disposal must be made according to official regulations.

## 14 Transport information

- |                                     |  |
|-------------------------------------|--|
| · <b>UN-Number</b>                  |  |
| · <b>DOT, IMDG, IATA</b>            | UN2924   |
| · <b>UN proper shipping name</b>    |  |
| · <b>DOT</b>                        | Flammable liquids, corrosive, n.o.s. (Methanol, Bromine) |
| · <b>IMDG, IATA</b>                 | FLAMMABLE LIQUID, CORROSIVE, N.O.S. (METHANOL, BROMINE)  |
| · <b>Transport hazard class(es)</b> |  |
| · <b>DOT</b>                        |  |
| · <b>Class</b>                      | 3 Flammable liquids                                      |

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|  |   |
|--|---|
| · <b>Label</b>   | 3,8   |
| · <b>IMDG, IATA</b>  |   |
| · <b>Class</b>   | 3 Flammable liquids   |
| · <b>Label</b>   | 3,8   |
| · <b>Packing group</b>   |   |
| · <b>DOT, IMDG, IATA</b>   | II  |
| · <b>Environmental hazards:</b>  |   |
| · <b>Marine pollutant:</b>   | No  |
| · <b>Special precautions for user</b>  | Warning: Flammable liquids  |
| · <b>Danger code (Kemler):</b>   | 300   |
| · <b>EMS Number:</b>   | F-E,S-C   |
| · <b>Stowage Category</b>  | B   |
| · <b>Stowage Code</b>  | SW2 Clear of living quarters.   |
| · <b>Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code</b> | Not applicable.   |
| · <b>UN "Model Regulation":</b>  | UN 2924 FLAMMABLE LIQUIDS, CORROSIVE, N.O.S. (METHANOL, BROMINE), 3 (8), II |

## 15 Regulatory information

- Safety, health and environmental regulations/legislation specific for the substance or mixture
- Sara

### · Section 355 (extremely hazardous substances):

CAS: 7726-95-6 | Bromine

### · Section 313 (Specific toxic chemical listings):

CAS: 67-56-1 | Methanol (Methyl Alcohol)

CAS: 7726-95-6 | Bromine

### · TSCA (Toxic Substances Control Act):

Methanol (Methyl Alcohol)

Sodium Bromide

Bromine

### · Proposition 65

#### · Chemicals known to cause cancer:

None of the ingredients is listed.

#### · Chemicals known to cause reproductive toxicity for females:

None of the ingredients is listed.

#### · Chemicals known to cause reproductive toxicity for males:

None of the ingredients is listed.

#### · Chemicals known to cause developmental toxicity:

CAS: 67-56-1 | Methanol (Methyl Alcohol)

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· **Carcinogenic categories**

· **EPA (Environmental Protection Agency)**

None of the ingredients is listed.

· **TLV (Threshold Limit Value established by ACGIH)**

None of the ingredients is listed.

· **NIOSH-Ca (National Institute for Occupational Safety and Health)**

None of the ingredients is listed.

· **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).

· **Hazard pictograms**



GHS02

GHS06

GHS07

GHS08

· **Signal word** *Danger*

· **Hazard-determining components of labeling:**

*Methanol (Methyl Alcohol)*

*Bromine*

· **Hazard statements**

*Extremely flammable liquid and vapor.*

*Toxic if inhaled.*

*Causes skin irritation.*

*Causes serious eye irritation.*

*Causes damage to organs.*

· **Precautionary statements**

*Keep away from heat/sparks/open flames/hot surfaces. - No smoking.*

*Ground/bond container and receiving equipment.*

*Use explosion-proof electrical/ventilating/lighting/equipment.*

*Use only non-sparking tools.*

*Take precautionary measures against static discharge.*

*Do not breathe dust/fume/gas/mist/vapors/spray.*

*Wash thoroughly after handling.*

*Do not eat, drink or smoke when using this product.*

*Use only outdoors or in a well-ventilated area.*

*Wear protective gloves/protective clothing/eye protection/face protection.*

*If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.*

*IF INHALED: Remove person to fresh air and keep comfortable for breathing.*

*If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.*

*Continue rinsing.*

*Specific treatment (see on this label).*

*If skin irritation occurs: Get medical advice/attention.*

*If eye irritation persists: Get medical advice/attention.*

*Take off contaminated clothing and wash it before reuse.*

*In case of fire: Use for extinction: CO2, powder or water spray.*

*Store in a well-ventilated place. Keep container tightly closed.*

*Store in a well-ventilated place. Keep cool.*

*Store locked up.*

*Dispose of contents/container in accordance with local/regional/national/international regulations.*

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· **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

### 16 Other information

*This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.*

· **Department issuing SDS:** Environment protection department.

· **Contact:**

· **Date of preparation / last revision**

11-14-2017: review SDS for accuracy. STN

Creation date for SDS 01-06-2015. STN

11/14/2017 / -

· **Abbreviations and acronyms:**

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

IATA: International Air Transport Association

ACGIH: American Conference of Governmental Industrial Hygienists

EINECS: European Inventory of Existing Commercial Chemical Substances

ELINCS: European List of Notified Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

NFPA: National Fire Protection Association (USA)

HMIS: Hazardous Materials Identification System (USA)

VOC: Volatile Organic Compounds (USA, EU)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

PBT: Persistent, Bioaccumulative and Toxic

vPvB: very Persistent and very Bioaccumulative

NIOSH: National Institute for Occupational Safety

OSHA: Occupational Safety & Health

TLV: Threshold Limit Value

PEL: Permissible Exposure Limit

REL: Recommended Exposure Limit

BEI: Biological Exposure Limit

Flam. Liq. 1: Flammable liquids – Category 1

Acute Tox. 3: Acute toxicity – Category 3

Skin Irrit. 2: Skin corrosion/irritation – Category 2

Eye Irrit. 2A: Serious eye damage/eye irritation – Category 2A

STOT SE 1: Specific target organ toxicity (single exposure) – Category 1